Title: C-130 Automated Digital Data System (CADDS)

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Discipline: Aircraft Data Management

Real-time airborne data acquisition, archival and distribution on the NASA/Ames Research Center (ARC) C-130 has been improved over the past three years due to the implementation of the C-130 Automated Digital Data System (CADDS). CADDS is a real-time, multitasking, multiprocessing ROM-based system. The system was developed on an Intel Multibus I with an 80286 microprocessor, an 80287 math coprocessor, and five 8085 microprocessors. Application software specific to the CADDS requirements is "buried" with the iRMX86 operating system on EPROM.

CADDS acquires data from both avionics and environmental sensors inflight for all C-130 data lines. Environmental parameters include Total Air Temperature, pressure altitude, radar altitude, wind speed and direction, dew-frost point, and infrared surface temperature. Housekeeping information is distributed, in serial format and at various baud rates, to RS-232 ports at the experimenter stations. The system also displays the data on video monitors available throughout the aircraft. Raw and processed data, which includes a universal time stamp, are archived to a PC-compatible Small Computer System Interface (SCSI) format tape. At any time, the CADDS operator can create a hardcopy of displayed data, enter flight information, or add comments concerning data and/or flight conditions.

CADDS is designed to be flexible and expandable in order to meet the needs of the scientific community on the Ames C-130 platform aircraft. CADDS replaces the NERDAS system.

CADDS C-130 Automated Digital Data System
Data Flow Diagram

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                                    Experimenter        Experimenter
                                      Station             Station
                                    Experimenter        Experimenter
                                      Station             Station

  Inertial
  Navigation
  System
                            CADDS
                                              Data Distr
  Time Code               DATA SYSTEM         Subsystem
  Generator                  CPU
                           CHASSIS
                                              Video Distr.
  IR Surface              MULTIBUS 1          & Patching
  Temperature                                 Subsystem

  Total Air                                   Line Printer
  Temperature

  Barometric                                  Data Storage
  Altimeter                                   SCSI Tape

  Radar
  Altimeter               Data Operator
                          Control Chassis
  Hygrometer
                              Recorder
  NS-001
                          Photo Station
  Photo                       VCR
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